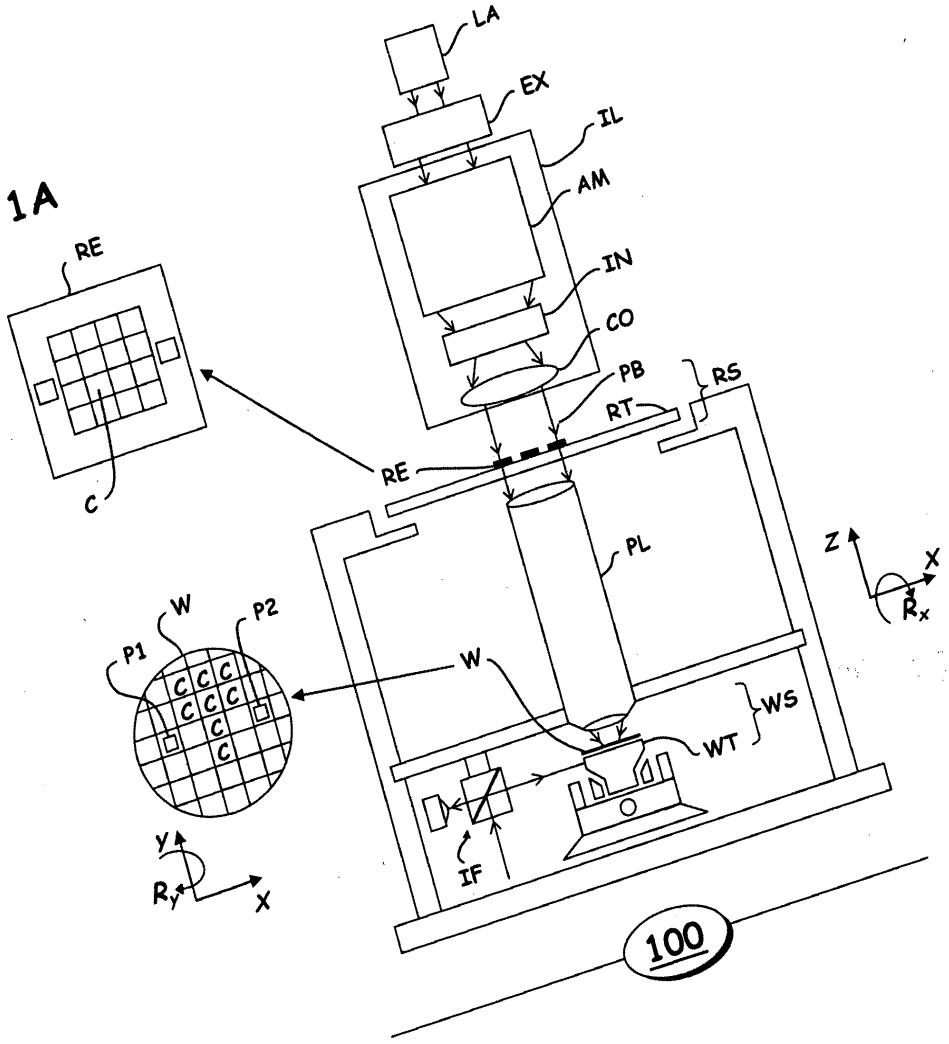
FIG. 1A


LA
EX
IL
AM
IN
CO
PB
RS
RT
RE
C
PL
Z
X
R_x
W
P1
P2
C
W
WS
WT
IF
y
R_y
X
100

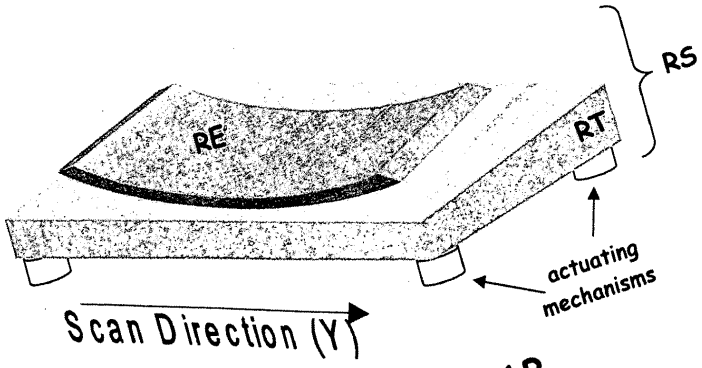
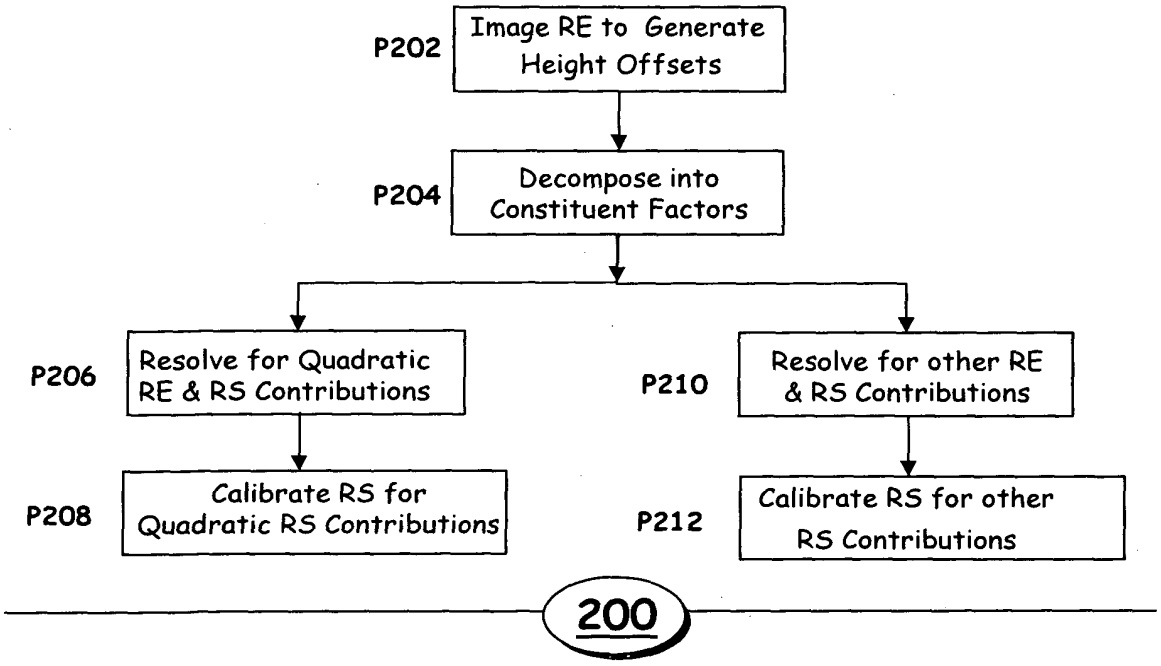

RS
RE
RT
actuating mechanisms
Scan Direction (Y)

FIG. 1B

FIG. 2A


P202
Image RE to Generate Height Offsets
P204
Decompose into Constituent Factors
P206
Resolve for Quadratic RE & RS Contributions
P208
Calibrate RS for Quadratic RS Contributions
P210
Resolve for other RE & RS Contributions
P212
Calibrate RS for other RS Contributions
200

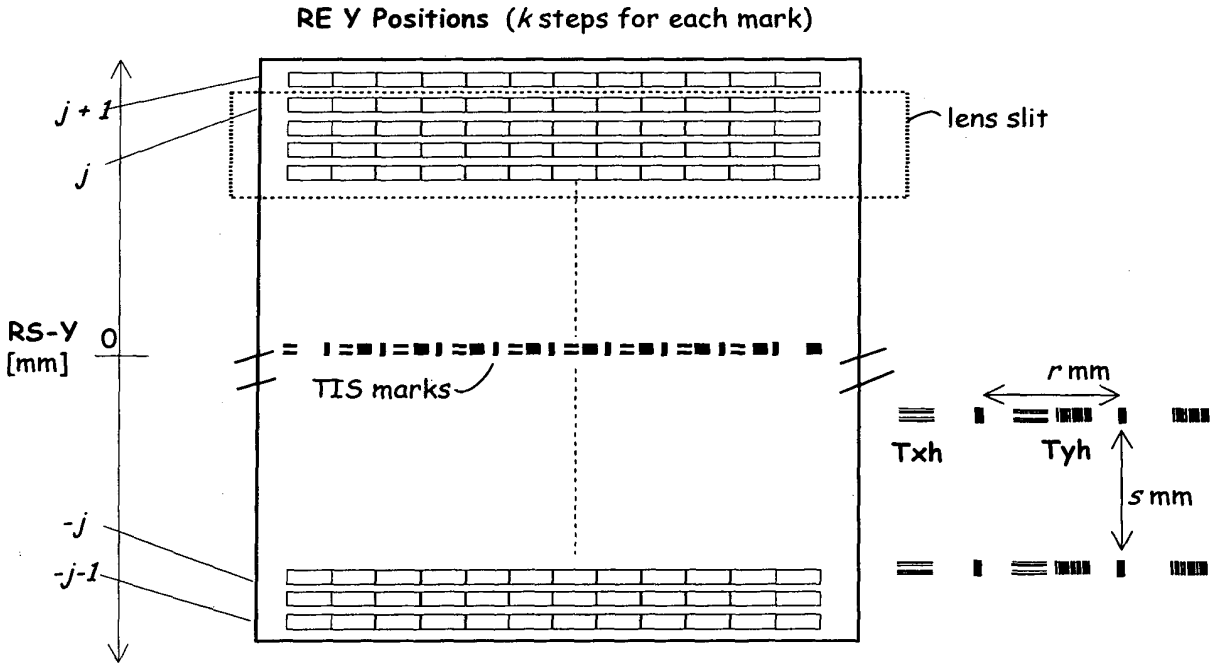
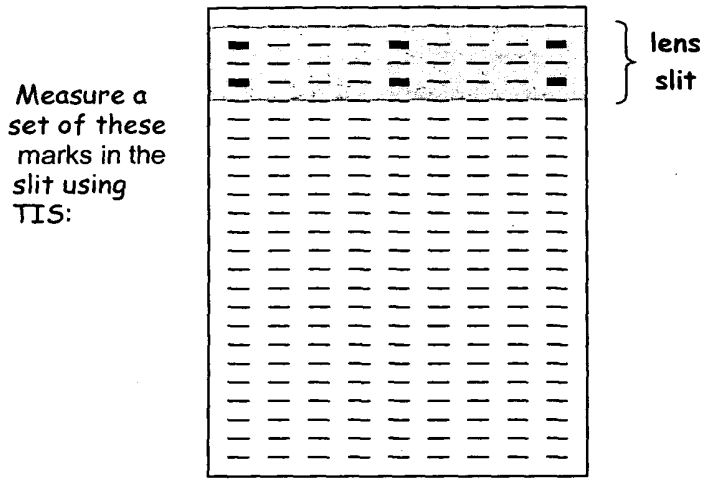
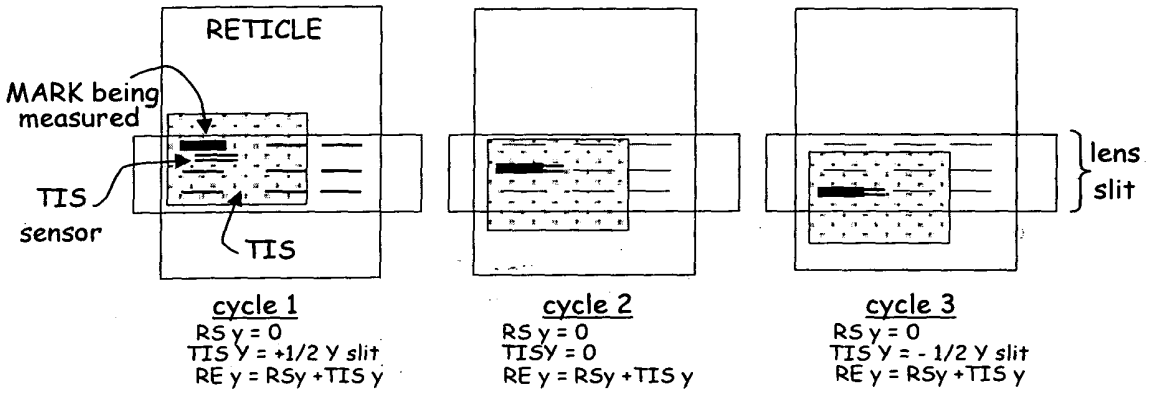

RE Y Positions (k steps for each mark)
j + 1
j
lens slit
RS-Y [mm]
0
TIS marks
r mm
Txh
Tyh
s mm
-j
-j-1

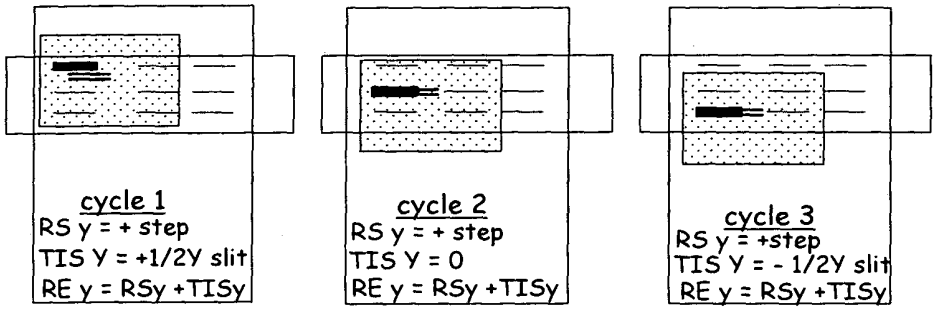
FIG. 2B



Iteration A:



Iteration B (move Reticle Stage RS)



This provides a set of Zmeas values at:

Z (x = left, Yrs = 0, Ysl = +1/2slit)

Z (x = 0, Yrs = 0, Ysl = +1/2slit)

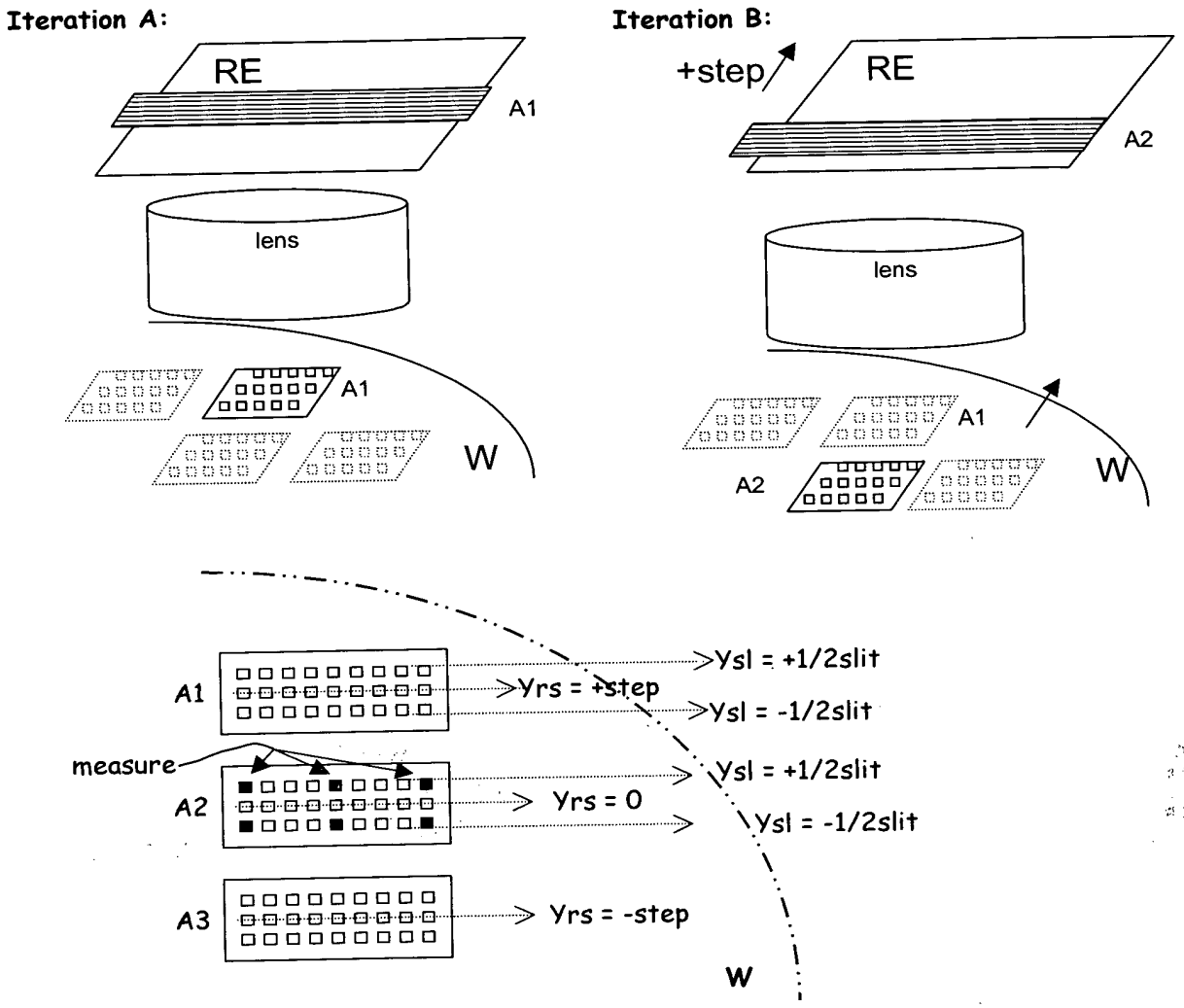
Z (x = right, Yrs = 0, Ysl = +1/2slit)

Z (x = left, Yrs = +step, Ysl = +1/2slit)

Z (x = 0, Yrs = +step, Ysl = +1/2slit)

Z (x = right, Yrs = +step, Ysl = +1/2slit)

FIG. 2C



This provides a set of Zmeas values at:

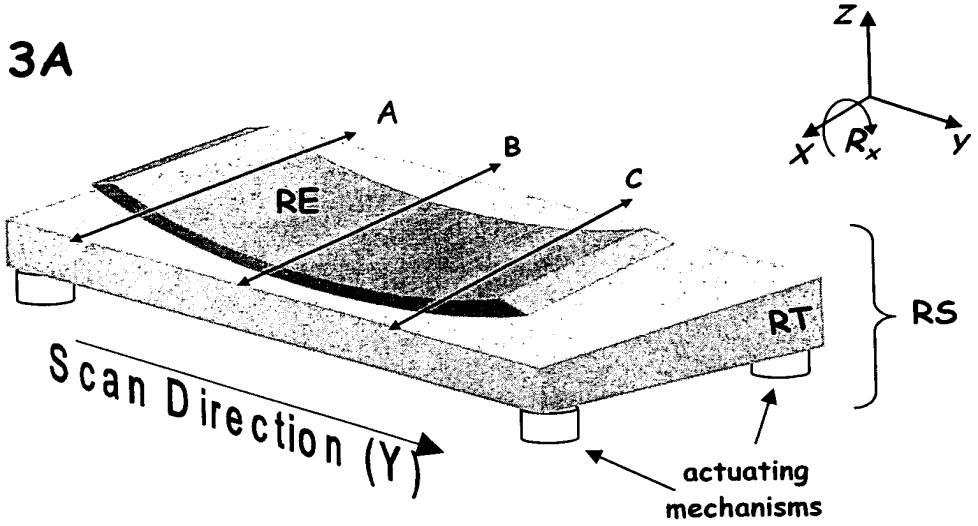
Z (x = left, Yrs = 0, Ysl = +1/2slit)
Z (x = 0, Yrs = 0, Ysl = +1/2slit)
Z (x = right, Yrs = 0, Ysl = +1/2slit)
Z (x = left, Yrs = 0, Ysl = -1/2slit)
Z (x = 0, Yrs = 0, Ysl = -1/2slit)
Z (x = right, Yrs = 0, Ysl = -1/2slit)

Target field A1 provides the following:

Z (x = left, Yrs = +step, Ysl = +1/2slit)
Z (x = 0, Yrs = +step, Ysl = +1/2slit)
Z (x = right, Yrs = +step, Ysl = +1/2slit)

FIG. 2D

FIG. 3A


Z
X
R_x
Y
A
B
C
RE
RT
RS
Scan Direction (Y)
actuating mechanisms

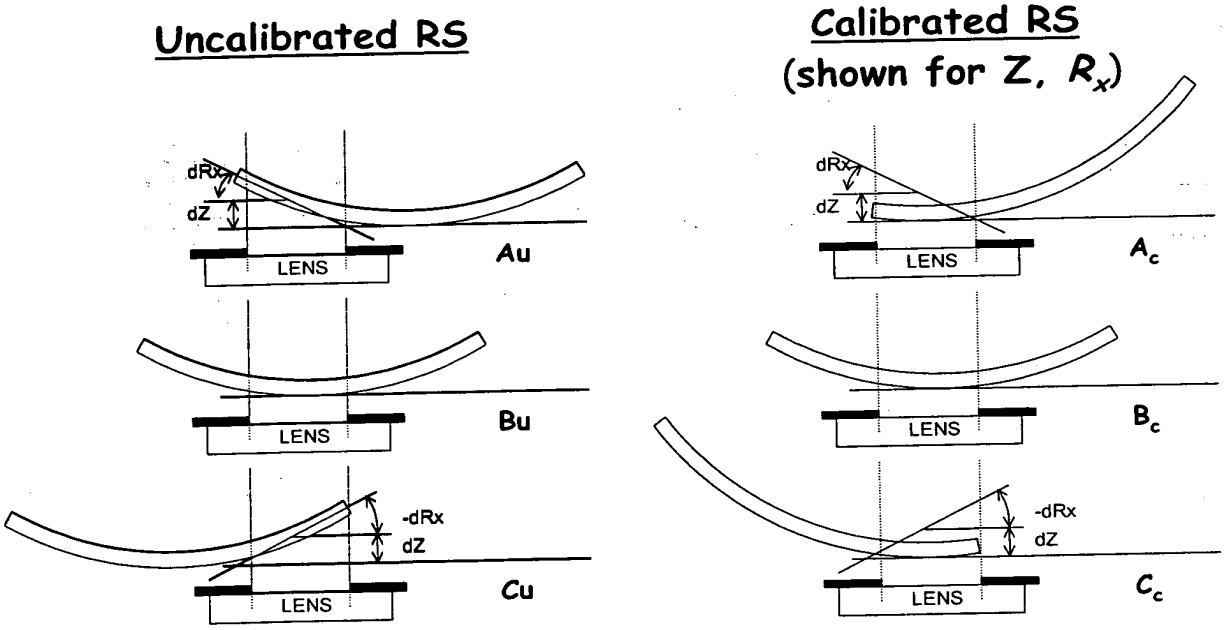

Uncalibrated RS
Calibrated RS
(shown for Z, R_x)
dRx
dZ
LENS
Au
Bu
-dRx
dZ
Cu
A_c
B_c
C_c

FIG. 3B

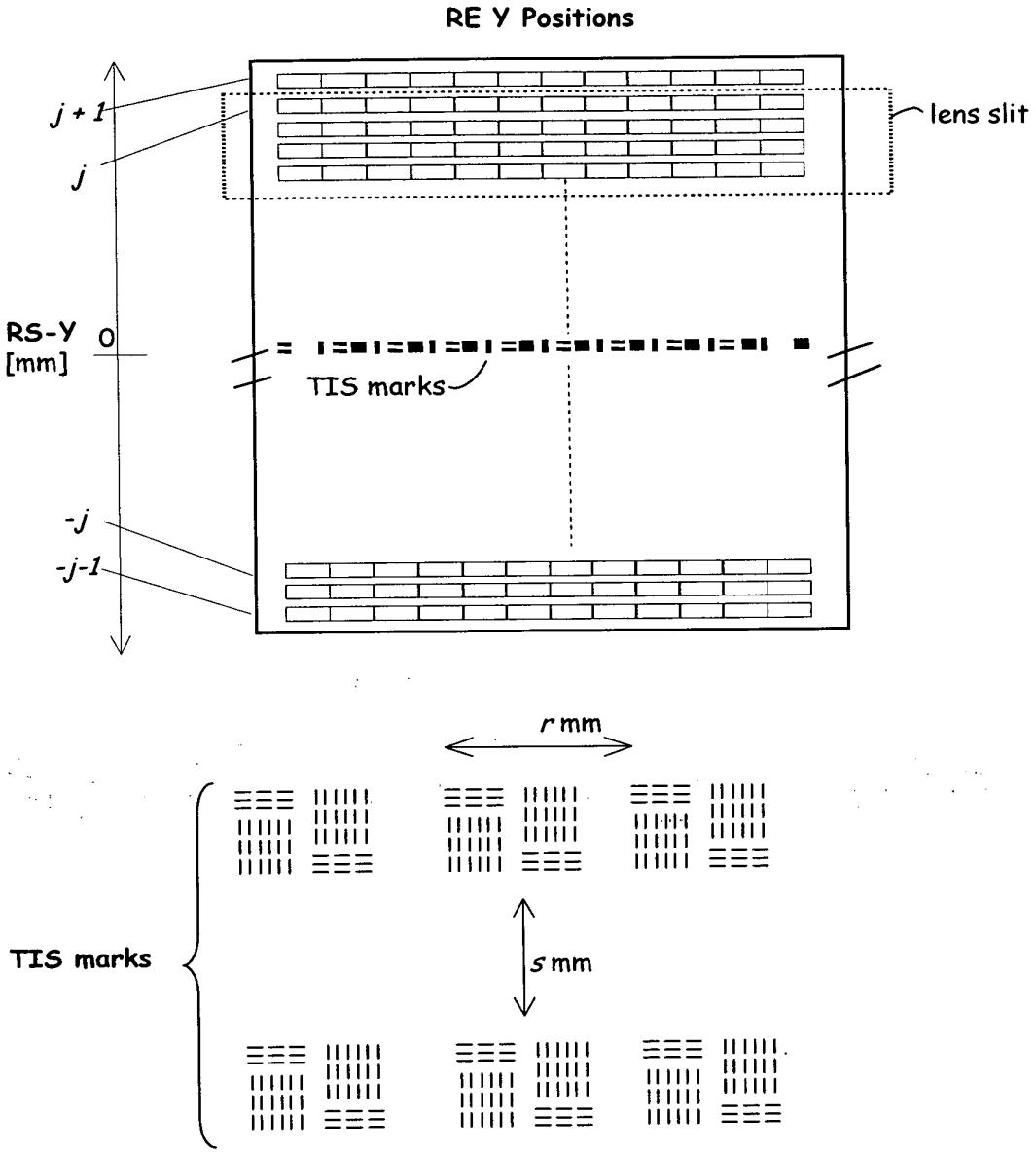

RE Y Positions
j + 1
j
lens slit
RS-Y
[mm]
0
TIS marks
-j
-j-1
r mm
TIS marks
s mm

FIG. 4